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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,693	01/03/2006	Hiroaki Koyama	CSP-115-A	8753
21828 7590 04/09/2008 CARRIER BLACKMAN AND ASSOCIATES 24101 NOVI ROAD SUITE 100 NOVI, MI 48375				
EXAMINER LIN, KUANG Y				
ART UNIT 1793		PAPER NUMBER		
NOTIFICATION DATE 04/09/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

cbalaw@gmail.com  
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### Office Action Summary

**Application No.**

10/532,693

**Applicant(s)**

KOYAMA ET AL.

**Examiner**

Kuang Y. Lin

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 6, 10, 14 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 10, 14 and 16-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 6, 10, 17-19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060,845 and further in view of JP 10-204,610.

JP '845 shows a method for prolonging service life of the casting die by maintaining the compressive residual stress of a die cavity surface for more than 1000 MPa (see [0003] and [0028]) through a shot-peening and a nitriding process. Thus, JP ,845 substantially shows the invention as claimed except it does not use the nitrosulphurizing process for coating the die surface and does not disclose the surface roughness. However, JP '610 shows to use the nitrosulphurizing process to form a coating layer on the die surface to prevent seizure in a die by forming a dense coating layer having a lubricating effect and a thermal insulating effect and to

improve the service life of the die by forming a nitrided layer containing iron sulfide on the die cavity surface. It would have been obvious to further include the iron sulfide of JP '610 in the nitrided layer of JP '845 by using the nitrosuphurizing process of JP '610 in view of the advantage. With respect to the roughness of the cavity die surface, in [0015] of JP '845 it discloses to perform shot peening before and after the nitriding treatment. Also, in [0025] it further discloses to use carborundum with a diameter of 50-100 micrometers and a injection pressure of 0.3 MPa for peening treatment of the die surface before the nitriding treatment and use glass beads with a diameter of 1-50 micrometers and a injection pressure of 0.4 MPa for peening treatment of die surface after the nitriding treatment. The process parameters of the peening process of JP '845 is similar to that of instant process. Thus, it is expected that the surface roughness of JP '845 will be the same as that of instant application. With respect to claim 3, it is conventional to use chrome molybdenum steel for making casting die as acknowledged by applicant as set forth in [0007] of the instant specification. With respect to claim 19, it would have been obvious to obtain the optimal temperature range in the process chamber through routine experimentation.

4. Claims 14, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060,845 in view of JP 10-204,610 as applied to claim 1 above, and further in view of US 6,546,968 to Nakagawa et al. for the same reasons as set forth in the previous office action.

Namely, Nakagawa et al. discloses that the atmosphere during nitriding treatment, instead of nitrogen gas, can be a nitrogen compound gas such as ammonia gas or the like or hydrogen gas. When the ammonia gas is used, the rate of nitriding reaction can be increased. At this time, by using together such gases as hydrogen, nitrogen, argon or the like, the rate of nitriding reaction can be controlled. Thus, it would have been obvious to further provide the hydrogen gas and ammonia gas of Nakagawa et al. in the nitriding process of JP '845 or nitrosuphurizing process of JP '610 such that to better control the nitriding or nitrosuphurizing reaction.

5. Applicant's arguments filed Jan. 11, 2008 have been fully considered but they are not persuasive.

a. Applicant in page 7, 4<sup>th</sup> paragraph through page 8, 3rd paragraph of the response stated that since in JP '845 the parameters used in the shot peening process is different from the parameters used in the instant process, thus it is not possible to make a rather flat cavity surface with a small maximum height of roughness of not more than 8 micrometer. However, in [0015] of JP '845 it describes that the shot peening treatment is applied before as well as after the applying the nitriding treatment. The process of JP '845 is identical that of instant process as described in [0020] and [0026] of instant specification. Thus, it is possible to make a rather flat surface in the process of JP '845. Further, since it is obvious that the surface roughness depends on the parameters, such as the particle size, shot speed and pressure, duration time, in the peening process, it

would have been obvious to obtain the optimal process parameters through routine experimentation depending on the final surface roughness to be obtained.

b. Applicant in page 9, 2nd paragraph of the response stated that JP '610 reference discloses a nitrided layer of a thickness in the range of 0.1-20 micrometer, while claims 2 and 3 direct to a thickness of 30 micrometer and 100 micrometer. Again, it would have been obvious to obtain the optimal thickness of the nitrided layer through a routine experimentation.

c. Applicant in page 9, 3<sup>rd</sup> paragraph of the response stated that JP '845 discloses a method including only a single shot peening step followed by a nitriding step for treating a used casting die. However, it is apparent that a new die does not have while a used die does have residual compressive stress. It would have been obvious to use a single or double peening steps depending on the remained residual compressive stress in the used casting die and the final compressive stress to be obtained.

d. Applicant in page 10, 2nd paragraph of the response stated that Nakagawa discloses a bond magnet and a method of manufacturing same and such is non-analogous art to the claimed die. However, Nakagawa discloses how the process parameters of nitriding treatment affect the nitriding reaction. There is no reason why the concept of Nakagawa can not be adapted in the nitriding process of JP '845.

e. Applicant in page 11, 1st through last paragraph of the response stated that the examiner has not provided a convincing or persuasive reason why it

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would be appropriated to combine the references. However, the examiner did in the body of the rejection set forth that "JP '610 shows to use the nitrosulphurizing process to form a coating layer on the die surface to prevent seizure in a die by forming a dense coating layer having a lubricating effect and a thermal insulating effect and to improve the service life of the die by forming a nitrided layer containing iron sulfide on the die cavity surface".

f. Applicant in page 12, 2<sup>nd</sup> through page 14, 2<sup>nd</sup> of the response questioned the proposed modification of JP '845 in view of JP '610. Applicant's attention is directed to [005] of the instant application wherein applicant admitted that it is conventional to use sulphonitriding treatment process to enhance the performance of the a casting die.

g. With respect to the arguments as set forth in page 14, last paragraph through page 16, 1st paragraph of the response, those issues has been treated supra.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 571-272-1179. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan J. Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kuang Y. Lin/  
Primary Examiner, Art Unit 1793

1-31-08



**Application Number****Application/Control No.**

10/532,693

**Examiner**

Kuang Y. Lin

**Applicant(s)/Patent under  
Reexamination**

KOYAMA ET AL.

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